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Appl. No. 10/690,755
Reply to Office Action of 04/05/2006

7 of 10

OTC0001
Customer Number 27187

REMARKS

The Office Action of April 5, 2006, is acknowledged. Claims 1-11 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,432, 677 to Mowatt et al., and claims 10-14 are rejected under 35 U.S.C. § 103(a) as being obvious over Mowatt et al. in view of common knowledge and U.S. Patent No. 6,538,210 to Sugaya.¹

Claim Rejections Under 35 U.S.C. §102(b)

Applicant respectfully traverses the rejection of claim 1 as being anticipated by Mowatt et al. First, the Examiner has asserted that reference numbers 124 and 150 in Mowatt et al. constitute first and second multilayer composite face sheet laminates as required by claim 1. Reference numbers 124 and 150 do not constitute first and second multilayer composite face laminates of structural fiber reinforced material. The Examiner has asserted that these reference numbers may comprise a structural fiber reinforced material and cited column 2, lines 46-48 in support of this contention. However, the section does not specifically identify a “fiber reinforced” material, and furthermore, the materials identified in this section are for “substrates.” The substrates referred to in column 2, lines 46-48 in Mowatt et al. relate to printed wiring board laminate substrates 12 and 16 (column 4, lines 38-67) and not reference numbers 124 and 150.

Face layers 124 and 150 are not substrates as defined in Mowatt et al. nor made from fiber reinforced structural materials. Rather, reference 124 is a Kapiton® film layer (column 8, line 37). Kapiton® is a brand name polyimide film manufactured by DuPont, as shown in Attachment A from DuPont’s website. As noted in Attachment A, polyimide film is a light-weight, flexible material. Accordingly, it is not suitable for structural-type applications and is not reinforced by fiber, as required in claim 1. The structural material as required in claim 1 and defined in Applicant’s specification is one that can add to the strength and stiffness to a composite structure, such as a bulkhead of an aircraft. (Paragraphs [0002], [0006], and [0050]). Mowatt et al. does not express any

¹ It appears that the rejection of claims 10-11 under 35 U.S.C. § 102(b) in Paragraph 4 of the Office Action was a typographical error as there is no comment regarding these claims in this section. These claims are addressed in Paragraph 7 of the Office Action under 35 U.S.C. § 103(a), and applicant is responding accordingly.

interest in having face laminates that can add stiffness or strength, and Kapiton® film material is not capable of providing such stiffness, strength and support. Applicant also notes that nowhere in Mowatt et al. is it suggested that the face sheet layer 124 may be a substrate material, such as used for printed wiring boards 12 and 16, instead of Kapiton® polyimide film.

Additionally, reference number 150 as set forth in Mowatt et al. is not a substrate, but rather is merely a solder mask (column 9, lines 2 and 3). A solder mask is not a structural layer and is not reinforced with fibers. It is merely a coating that may be applied using screen printing, curtain coating or spray coating techniques to expose only the areas to be soldered. (See Attachment B from Technic Inc. website www.technic.com and Attachment C from www.pcmag.com.) Accordingly, solder mask material does not meet the limitation of claim 1 of a structural fiber reinforced material.

Furthermore, claim 1 requires that each of the face sheet laminates is “multilayer.” This limitation is clearly shown and discussed in applicant’s specification. Face sheet structural laminates 22a and 22b include multiple carbon or glass fiber reinforced layers 34 (Figure 2 and Paragraph [0051]). On the other hand, face sheet layers 124 and 150 in Mowatt et al. each consist of only a single layer.

Accordingly, claim 1 is not anticipated by Mowatt et al. and should be allowable.

Claim Rejections Under 35 U.S.C. §103(a)

Claims 2-14 depend from claim 1, and as claim is not anticipated by Mowatt et al., they should also be allowable. Applicant also makes the following notations based upon the form of rejection of claims 10 and 11. The Examiner asserts that it is old and well known to have redundant circuitry to function in a case other components fail in order to maintain the functionality of the device as required in claim 10. In addition, claim 11 includes the structure of a signal control device that senses if equivalent components of the circuitry have malfunctioned or failed and a switch that electronically reconfigures the circuitry to isolate the equivalent components or circuitry that have malfunctioned and activates the redundant components. The Examiner has maintained that these limitations only require the ability to perform the function of these components. Applicant disagrees that these limitations only relate to function. Several structural components are cited in claims 10 and 11, including redundant circuitry and components, a signal control device, and a switch. The

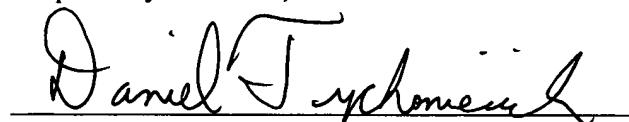
Examiner has failed to set forth a composite sandwich structure including all these components. In addition, claims 10 and 11 include characterizations and relationships between these components not disclosed or taught by the cited prior art. Even if part of these claims are characterized as functional, such functional limitations are to be evaluated the same as any structural limitation in a claim. “There is nothing inherently wrong with defining some part of an invention in functional terms.” M.P.E.P. § 2173.05(g) (citing *In re Swinehart*, 439 F.2d 210, 169 U.S.P.Q. 226 (CCPA 1971)). Furthermore, “a functional limitation must be evaluated and considered, just like any other limitation of the claim...” M.P.E.P. § 2173.05(g). Also, as noted in *In re Swinehart*, 439 F.2d 210, 169 U.S.P.Q. 226 (CCPA 1971)), “we are unable to see any merit in any proposition which would require the denial of a claim solely because of a type of language used to define the subject matter for which patent protection is sought. Insofar as the opinion in *In re Fisher*, 50 CCPA 1025, 307 F.2d 948, 135 U.S.P.Q. 222 (1962), cited and relied on by the Patent Office here is inconsistent with the above statement, it will no longer be followed. Any doubt whether claims containing language such as that used in the *Fisher* case would be patentable was laid to rest last term when this court reversed the Patent Office position when the *Fisher* application came before us for a second time.” *Id.* at FN 4. Accordingly, the Examiner is requested to withdraw the rejection or to provide documentation to support the rejection under 35 U.S.C. § 103(a) that teaches or suggests a composite sandwich structure with the components claimed that have the characteristics and interrelation as recited in claims 10 and 11.

Applicant notes that claims 1, 6, and 10 have been amended to address informality issues.

In addition, applicant has included new claims 21-30 that include other features of the invention not shown or taught in the cited references.

Applicant considers that it has addressed all outstanding issues in the Office Action and that remaining claims 1-14 and 21-30 are in condition for allowance, and respectfully request the Examiner to assure a Notice of Allowability. Should any additional fee or extension of time be required for this response, please consider this a request for such and an authorization to charge or credit Baker & Daniels LLP Deposit Account No. 02-0387 (973748.01).

Respectfully submitted,



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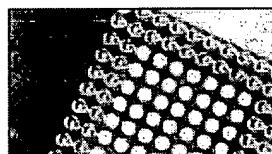
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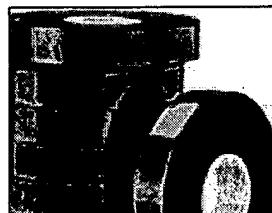
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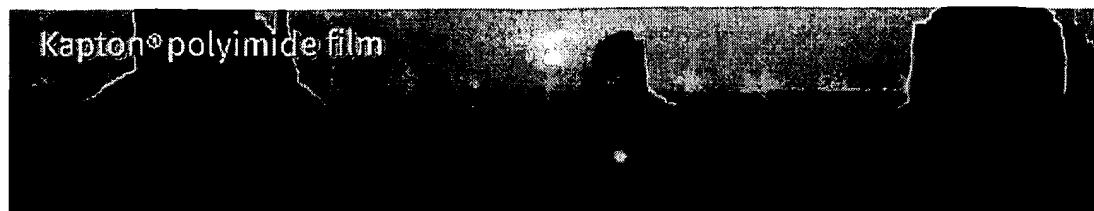
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DuPont™ Kapton® offers the durability and reliability needed for applications in extreme environments. Kapton® can withstand temperatures as low as -269°C and as high as 400°C, and still retain its properties. In this industry, it is used primarily as insulation for aircraft and spacecraft wiring.

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Since the birth of manned space flight more than four decades ago, DuPont has been along for the ride with products essential for lighter weight, reduced volume, durability and environmental resistance.

Kapton® used as a non-flammable lightweight material for Orcon's aircraft insulation

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Although thin and lightweight, Kapton® can withstand flexing without developing cracks or tears. Kapton® enables diaphragms and other parts that must move constantly under high pressure to remain flexible and functional, while performing for millions of cycles.

The enhanced thermal conductivity and heat resistance of Kapton® can be critical in automotive parts where both properties play a role in performance, such as temperature sensors for instrumentation.

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Solder Mask & Legend Ink

Technic Inc. is a worldwide supplier of solder mask materials manufactured in our Rhode Island and UK manufacturing facilities.

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Extremely flexible, with a wide operating window, the TechniMask ISR 1000 series products can be applied using screen printing, curtain coating or spray coating techniques.

In addition to liquid photoimagable solder mask products, Technic also supplies:

- UV curable solder mask for polyimide and polyester flexible circuit boards
- Thermal curable legend ink materials
- Liquid photoimagable plating resist for secondary plating operations
- UV curable plate/etch resist for screen coat applications
- Thermal cure hole plug material

ATTACHMENT B
Application No. 10/690,755
Attorney Docket No. OTC0001

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TechniMask ISR 1000 Series

The TechniMask ISR 1000 series product line is utilized in the manufacture of printed circuit boards as a permanent protective coating. The TechniMask ISR 1000 Series products are photodefineable and develop in carbonate solution. The liquid photoimagable solder mask product line is available in a wide variety of colors and surface finishes. It is supplied in pre-measured two-component packaging. Extremely flexible, with a wide operating window, the TechniMask ISR 1000 series products can be applied using screen printing, curtain coating or spray coating techniques.



2 mil L/S, 1 mil solder dams

The TechniMask ISR 1000 series products exhibit the following performance properties:

- Excellent cosmetic appearance with a range of colors and surface finishes.
- Wide process latitude enabling fine image reproductions with clean plated through hole via development.
- Resolution capability below 2 mils for ultra fine pitch solder dams
- Resistant to multiple soldering operations.
- Superior resistance to all plated surface-finishing processes including electroless nickel and immersion gold, immersion tin and immersion silver.
- Resistant to downstream processing chemicals including no-clean fluxes, cleaners and solvents
- Fully compatible with adhesives, underfills, and assembly rework processes
- UL File #E83246, rated 94 V-0 with soldering limits of 20 seconds @ 288°C
- Meets or exceeds IPC-SM-840C, Bellcore TR-NWT-000078, and MIL-P-55110 D specifications

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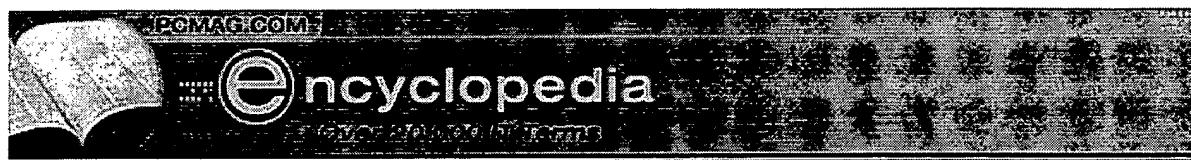
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Definition of: solder mask

An insulating pattern applied to a printed circuit board that exposes only the areas to be soldered.

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Application No. 10/690,755
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